

The average cloudiness of the whole sky is determined by numerous personal observations at all stations during the daytime, and is given in the column "average cloudiness" in Table I; its complement, or percentage of clear sky, is given in the last column of Table X for the 61 stations at which instrumental self-registers are maintained.

COMPARISON OF DURATIONS AND AREAS.

The sunshine registers give the *durations* of effective sunshine whence the durations relative to possible sunshine are derived; the observers' personal estimates give the percentage of *area* of clear sky. These numbers have no necessary relation to each other, since stationary banks of clouds may obscure the sun without covering the sky, but when all clouds have a steady motion past the sun and are uniformly scattered over the sky, the percentages of duration and of area agree closely. For the sake of comparison, these percentages have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental records of percentages of durations of sunshine are almost always larger than the observers' personal estimates of percentages of area of clear sky; the average excess for August, 1897, is 10 per cent for photographic and 10 per cent for thermometric records.

The details are shown in the accompanying table, in which the stations are arranged according to the *total possible duration* of sunshine, and not according to the *observed duration*.

Difference between instrumental and personal observations of sunshine.

Stations.	Latitude.	Apparatus.	For whole month.		Instrumental record of sunshine.			
			Total possible.	Personal.	Photographic.	Difference.	Thermometric.	Difference.
Key West, Fla.	24 34	T.	403.3	47	58	58	63	+5
Tampa, Fla.	27 57	T.	406.9	58	58	+8	63	+5
Galveston, Tex.	29 18	P.	406.0	50	43	+8	43	-1
New Orleans, La.	29 58	P.	409.7	43	54	+10	63	+9
Savannah, Ga.	32 06	P.	412.6	44	54	+10	63	+9
Vicksburg, Miss.	32 23	T.	412.6	54	74	-8	50	+6
San Diego, Cal.	32 43	P.	414.0	53	78	+7	50	+6
Charleston, S. C.	32 47	T.	414.0	44	78	+7	50	+6
Phoenix, Ariz.	33 28	P.	414.0	71	78	+7	50	+6

Difference between instrumental and personal observations.—Cont'd.

Stations.	Latitude.	Apparatus.	Total possible duration for the whole month.	Personal estimated area of clear sky.	Instrumental record of sunshine.			
					Photographic.	Difference.	Thermometric.	Difference.
Atlanta, Ga.	33 45	T.	415.8	47	58	+11	51	+4
Los Angeles, Cal.	34 08	P.	415.8	72	58	+11	66	+4
Wilmington, N. C.	34 14	T.	415.8	62	58	+11	66	+4
Little Rock, Ark.	34 45	T.	417.1	50	58	+11	66	+4
Chattanooga, Tenn.	35 04	T.	417.1	50	58	+11	66	+4
Santa Fe, N. Mex.	35 41	P.	418.7	58	70	+14	55	+5
Raleigh, N. C.	35 45	T.	418.7	48	58	+11	72	+4
Nashville, Tenn.	36 10	T.	418.7	66	58	+11	79	+13
Fresno, Cal.	36 43	T.	430.1	88	58	+11	94	+6
Dodge City, Kans.	37 45	P.	432.1	69	79	+10	60	+6
San Francisco, Cal.	37 48	T.	432.1	54	58	+11	73	+18
Louisville, Ky.	38 15	T.	432.1	55	58	+11	81	+17
St. Louis, Mo.	38 38	T.	433.2	64	58	+11	81	+17
Washington, D. C.	38 54	P.	433.2	61	78	+17	73	+5
Kansas City, Mo.	39 05	P.	433.2	68	72	+4	73	+5
Cincinnati, Ohio	39 06	T.	433.2	67	58	+11	60	+15
Parkersburg, W. Va.	39 16	T.	433.2	45	58	+11	49	-5
Baltimore, Md.	39 18	T.	433.2	54	58	+11	49	-5
Atlantic City, N. J.	39 23	P.	433.2	63	75	+12	68	+16
Denver, Colo.	39 45	P.	435.2	55	74	+19	66	+16
Indianapolis, Ind.	39 46	T.	435.2	52	58	+11	66	+16
Philadelphia, Pa.	39 57	T.	435.2	50	58	+11	74	+19
Columbus, Ohio	39 58	T.	435.2	53	58	+11	77	+22
Harrisburg, Pa.	40 16	T.	435.2	55	58	+11	44	-5
Pittsburg, Pa.	40 32	T.	437.4	49	58	+11	69	+16
New York, N. Y.	40 43	T.	437.4	58	58	+11	69	+16
Salt Lake City, Utah	40 46	P.	437.4	48	77	+29	69	+16
Eureka, Cal.	40 48	P.	437.4	40	28	-12	69	+16
Cheyenne, Wyo.	41 08	P.	437.4	55	58	+11	69	+16
Omaha, Nebr.	41 16	P.	437.4	57	72	+15	69	+16
Cleveland, Ohio	41 30	T.	439.4	53	58	+11	60	+7
Des Moines, Iowa	41 35	T.	439.4	72	58	+11	74	+19
Chicago, Ill.	41 53	T.	439.4	55	58	+11	54	-1
Erie, Pa.	42 07	T.	439.4	52	58	+11	73	+18
Binghamton, N. Y.	42 08	T.	439.4	50	58	+11	65	+15
Detroit, Mich.	42 30	T.	439.4	56	58	+11	69	+18
Boston, Mass.	42 31	T.	439.4	52	58	+11	63	+11
Dubuque, Iowa	42 30	T.	439.4	62	58	+11	64	+2
Albany, N. Y.	42 39	T.	431.3	55	58	+11	78	+23
Buffalo, N. Y.	42 53	T.	431.3	49	58	+11	77	+18
Rochester, N. Y.	43 08	T.	431.3	58	58	+11	59	+3
Idaho Falls, Idaho	43 29	T.	431.3	65	58	+11	67	+2
Portland, Me.	43 39	T.	433.6	52	58	+11	63	+11
Northfield, Vt.	44 10	P.	433.6	45	57	+12	63	+11
Eastport, Me.	44 54	P.	435.6	38	51	+13	63	+11
St. Paul, Minn.	44 58	P.	435.6	45	59	+14	63	+11
Minneapolis, Minn.	44 59	T.	435.6	51	58	+11	66	+14
Portland, Oreg.	45 32	T.	437.6	71	58	+11	82	+24
Helena, Mont.	45 32	P.	437.6	71	80	+9	82	+24
Blismarck, N. Dak.	46 34	P.	440.0	78	85	+7	80	+8
Seattle, Wash.	47 38	T.	442.5	68	70	+2	80	+8
Spokane, Wash.	47 40	P.	442.5	65	89	+24	80	+8

CLIMATE AND CROP SERVICE.

By JAMES BRARY, Chief of Climate and Crop Service Division.

The following extracts relating to the general weather conditions in the several States and Territories are taken from the monthly reports of the respective sections of the Climate and Crop Service. The name of the section director is given after each summary.

Snowfall and rainfall are expressed in inches.

Alabama.—The mean temperature was 78.8°, or 0.1° below normal; the highest was 106°, at Gadsden on the 3d, and the lowest, 53°, at Maplegrove on the 13th, and at Scottsboro on the 25th. The average precipitation was 5.58, or 1.57 above normal; the greatest monthly amount, 13.83, occurred at Citronelle, and the least, 1.05, at Clanton.—*F. P. Chaffee.*

Arizona.—The mean temperature was 79.9°, or 0.9° above normal; the highest was 112°, at Signal on the 18th, and at Yuma on the 17th, and the lowest, 43°, at Whipple on the 20th. The average precipitation was 2.30, or 0.24 below normal; the greatest monthly amount, 5.37, occurred at Mount Huachuca, and the least, 0.17, at Flagstaff.—*W. T. Blythe.*

Arkansas.—The mean temperature was 79.7°, or 1.6° above normal; the highest was 111°, at Malvern on the 4th, and the lowest, 45°, at Jonesboro on the 17th. The average precipitation was 2.59, or 0.63

below normal; the greatest monthly amount, 5.97, occurred at Fort Smith, and the least, 0.25, at Camden.—*F. H. Clarke.*

California.—The mean temperature was 73.9°, or 0.2° above normal; the highest was 124°, at Salton on the 12th, and the lowest, 18°, at Sneddens Ranch on the 29th. The average precipitation was 0.03, or normal; the greatest monthly amount, 1.57, occurred at Little Rock Creek, while no rain fell at most places.—*W. H. Hammon.*

Colorado.—The mean temperature was 65.0°, or 1.0° below normal; the highest was 102°, at Lamar on the 1st, and the lowest, 21°, at Walden on the 15th. The average precipitation was 2.38, or 0.70 above normal; the greatest monthly amount, 8.10, occurred at Castlerock, and the least, 0.26, at Paonia.—*F. H. Brandenburg.*

Florida.—The mean temperature was 81.6°, or 0.2° above normal; the highest was 104°, at Macclenny on the 2d, and the lowest, 65°, at Manatee on the 7th, at Wausau on the 25th, and at New Smyrna on the 27th. The average precipitation was 6.68, or 0.20 above normal; the greatest monthly amount, 12.41, occurred at De Funiak Springs, and the least, 19.1, at Merritts Island.—*A. J. Mitchell.*

Georgia.—The mean temperature was 78.3°, or 0.7° below normal; the highest was 105°, at Poulen on the 2d, and the lowest, 50°, at Cedar-town on the 14th, and at Diamond on the 30th. The average precipitation was 5.07, or 0.32 above normal; the greatest monthly amount, 10.39, occurred at Augusta, and the least, 1.63, at Clayton.—*J. B. Marbury.*

Idaho.—The mean temperature was 69.0°, the highest was 111°, at Lewiston on the 20th, and the lowest, 29°, at Minidoka on the 9th. The average precipitation was 0.32; the greatest monthly amount, 1.00, occurred at Martin, while none fell at several stations.—*D. P. McCallum.*

Illinois.—The mean temperature was 71.7°, or 1.5° below normal; the highest was 108°, at Mount Vernon on the 4th, and the lowest, 36°, at Lanark on the 20th. The average precipitation was 1.12, or 1.89 below normal; the greatest monthly amount, 2.79, occurred at Aurora, and the least, 0.01, at Carrollton and Palestine.—*C. E. Linney.*

Indiana.—The mean temperature was 71.4°, or 0.7° below normal; the highest was 102°, at Salem on the 3d, and at Vincennes on the 4th, and the lowest, 40°, at Laporte on the 20th, and at Warsaw on the 22d. The average precipitation was 1.59, or 1.39 below normal; the greatest monthly amount, 4.77, occurred at Huntington, and the least, 0.29, at Hammond.—*C. F. R. Wappenhans.*

Iowa.—The mean temperature was 68.9°, or 2.4° below normal; the highest was 104°, at College Springs on the 2d, and the lowest, 35°, at Mason City on the 29th. The average precipitation was 1.80, or 1.39 below normal; the greatest monthly amount, 4.98, occurred at Logan, and the least, 0.47, near Ames.—*G. M. Chappel.*

Kansas.—The mean temperature was 76.0°, or 0.1° below normal; the highest was 109°, at Abilene, Cunningham, Medicine Lodge, Minneapolis, and Salina on the 1st; the lowest was 46°, at Seneca on the 20th, Norton on the 21st, and Phillipsburg on the 25th. The average precipitation was 3.06, or 0.09 below normal; the greatest monthly amount, 6.30, occurred at Lakin and Pratt, and the least, 0.56, at Beloit.—*T. B. Jennings.*

Kentucky.—The mean temperature was 75.2°, or 0.6° below normal; the highest was 104°, at Paducah on the 1st and at Greensburg on the 2d, and the lowest, 49°, at Eubank on the 26th. The average precipitation was 2.33, or 0.95 below normal; the greatest monthly amount, 5.45, occurred at Burnside, and the least, 0.40, at Earlington.—*Frank Burke.*

Louisiana.—The mean temperature was 81.2°, or 0.7° above normal; the highest was 109°, at Liberty Hill on the 4th, and the lowest, 58°, at Mansfield on the 24th. The average precipitation was 5.84, or 0.48 above normal; the greatest monthly amount, 13.46, occurred at Hammond, and the least, 0.63, at Mansfield.—*R. E. Kerkam.*

Maryland and Delaware.—The mean temperature was 71.8°, or 1.7° below normal; the highest was 95°, at Westernport on the 4th and at Pocomoke City on the 16th, and the lowest, 39°, at Deerpark on the 26th and at Sunnyside on the 27th. The average precipitation was 3.51, or 0.17 below normal; the greatest monthly amount, 5.62, occurred at Bachmans Valley, and the least, 1.48, at Port Deposit.—*F. J. Wals.*

Michigan.—The mean temperature was 64.7°, or 2.0° below normal; the highest was 97°, at Eloise on the 3d, and the lowest, 28°, at Humboldt on the 23d. The average precipitation was 2.04, or 0.39 below normal; the greatest monthly amount, 4.84, occurred at Hanover, and the least, 0.31, at Big Rapids.—*O. F. Schneider.*

Minnesota.—The mean temperature was 64.2°, or 2.7° below normal; the highest was 95°, at New London on the 28th, and the lowest, 26°, at Tower on the 25th. The average precipitation was 2.54, or 0.17 below normal; the greatest monthly amount, 5.55, occurred at Glenwood, and the least, 0.30, at Milan.—*T. S. Outram.*

Mississippi.—The mean temperature was 80.6°, or 0.6° above normal; the highest was 108°, at Windham on the 4th, and the lowest, 55°, at Batesville on the 24th. The average precipitation was 5.19, or 1.23 above normal; the greatest monthly amount, 15.60, occurred at Magnolia, and the least, 0.69, at Corinth.—*R. J. Hyatt.*

Missouri.—The mean temperature was 74.1°, or 0.7° below normal; the highest was 108°, at Emma on the 1st, and the lowest, 41°, at Potosi on the 17th and at Sublett on the 20th. The average precipitation was 2.29, or 0.86 below normal; the greatest monthly amount, 7.87, occurred at Houstonia, and the least, 0.56, at Oakfield.—*A. E. Hackett.*

Montana.—The mean temperature was 67.9°, or 0.4° below normal; the highest was 104°, at Chinook and Glasgow on the 11th, and the lowest, 31°, at Kipp on the 2d and at Manhattan on the 26th. The average precipitation was 0.31, or 0.43 below normal; the greatest monthly amount, 1.58, occurred at Maryville, while none fell at Fort Benton.—*J. Warren Smith.*

Nebraska.—The mean temperature was 70.8°, or 1.7° below normal; the highest was 107°, at Imperial on the 1st, and the lowest, 37°, at Nebraska City on the 20th. The average precipitation was 2.60, or 0.02 below normal; the greatest monthly amount, 7.75, occurred at Loup, and the least, trace, at Fort Robinson.—*G. A. Loveland.*

Nevada.—The mean temperature was 73.3°, or 0.9° above normal; the highest was 110°, at St. Thomas on the 4th, and the lowest, 31°, at Hamilton on the 31st. The average precipitation was 0.31, or 0.02 above normal; the greatest monthly amount, 1.75, occurred at Fenelon, while none fell at several stations.—*R. F. Young.*

New England.—The mean temperature was 66.1°, or 0.5° below normal; the highest was 91°, at Stratford, N. H., on the 8th, and the lowest, 33°, at Fort Fairfield, Me., on the 23d. The average precipitation was 4.16, or 0.10 below normal; the greatest monthly amount, 8.67, occurred at Colchester, Conn., and the least, 1.41, at Portland, Me.—*J. W. Smith.*

New Jersey.—The mean temperature was 71.0°, or 1.3° below normal;

the highest was 92°, at Lambertville on the 11th, and the lowest, 41°, at Charlotteburg on the 21st. The average precipitation was 4.39, or 0.55 above normal; the greatest monthly amount, 8.69, occurred at Newark, and the least, 2.07, at Atlantic City.—*E. W. McGann.*

New Mexico.—The mean temperature was below normal; the highest was 100°, at Eddy on the 9th, and the lowest, 26°, at Buckman's on the 23d. The average precipitation was slightly above normal; the greatest monthly amount, 5.31, occurred at Fort Bayard, and the least, trace, at Olio.—*H. B. Hersey.*

New York.—The mean temperature was 66.8°, or 1.3° below normal; the highest was 99°, at Mount Morris on the 3d, and the lowest, 34°, at South Canisteo on the 21st. The average precipitation was 3.20, or 0.35 below normal; the greatest monthly amount, 6.60, occurred at Coopers-town, and the least, 0.20, at Mount Morris.—*R. M. Hardinge.*

North Carolina.—The mean temperature was 75.1°, or 0.7° below normal; the highest was 100°, at Henderson on the 5th, and the lowest, 45°, at Linville on the 25th. The average precipitation was 3.41, or 2.26 below normal; the greatest monthly amount, 7.35, occurred at Selma, and the least, 1.16, at Morganton.—*C. F. von Herrmann.*

North Dakota.—The mean temperature was 64.1°, or 2.0° below normal; the highest was 106°, at New England City on the 25th, and the lowest, 29°, at Gallatin and McKinney on the 30th. The average precipitation was 1.18, or 0.40 below normal; the greatest monthly amount, 3.48, occurred at Hamilton, and the least, 0.16, at Towner.—*B. H. Bronson.*

Ohio.—The mean temperature was 69.4°, or 1.0° below normal; the highest was 101°, at Celina on the 3d, at Carrollton on the 4th, and at Cherryfork on the 3d and 4th; the lowest was 38°, at Millport on the 30th and at Greenhill on the 31st. The average precipitation was 2.72, or 0.34 below normal; the greatest monthly amount, 8.40, occurred at Colebrook, and the least, 1.14, at Norwalk.—*H. W. Richardson.*

Oklahoma.—The mean temperature was 79.4°; the highest was 108°, at Lehigh on the 4th, and the lowest, 51°, at Anadarko on the 19th. The average precipitation was 3.12; the greatest monthly amount, 5.48, occurred at Jefferson, and the least, 0.43, at Lehigh.—*J. I. Widmeyer.*

Oregon.—The mean temperature was 68.9°, or 2.7° above normal; the highest was 109°, at Pendleton on the 19th, and the lowest, 30°, at Government Camp on the 1st; the month was the warmest August on record. The average precipitation was 0.46, or 0.16 above normal; the greatest monthly amount, 2.10, occurred at Bay City, while none fell at Ashland and Newbridge.—*B. S. Pague.*

Pennsylvania.—The mean temperature was 67.9°, or 1.4° below normal; the highest was 97°, at Greensboro on the 4th, and the lowest, 34°, at Lockhaven on the 18th. The average precipitation was 3.17, or 0.78 below normal; the greatest monthly amount, 8.60, occurred at Swiftwater, and the least, 0.34, at Cannonsburg.—*T. F. Townsend.*

South Carolina.—The mean temperature was 78.0°, or 0.3° below normal; the highest was 102°, at Gillison on the 6th and 7th, and the lowest, 57°, at Walhalla on the 23d, 24th, and 25th. The average precipitation was 5.16, or 0.97 below normal; the greatest monthly amount, 9.93, occurred at Trenton, and the least, 1.27, at Winnsboro.—*J. W. Bauer.*

South Dakota.—The mean temperature was 66.9°, or 3.0° below normal; the highest was 109°, at Nowlin on the 25th, and the lowest, 35°, at Ashcroft. The average precipitation was 2.27, or 0.16 below normal; the greatest monthly amount, 4.96, occurred at Alexandria, and the least, 0.04, at Edgemont.—*S. W. Glenn.*

Tennessee.—The mean temperature was 76.0°, or about normal; the highest was 105°, at St. Joseph on the 3d, and the lowest, 43°, at Hohenwald on the 17th. The average precipitation was 2.88, or 0.75 below normal; the greatest monthly amount, 6.40, occurred at Rugby, and the least, 0.16, at Covington.—*H. C. Bate.*

Texas.—The mean temperature for the State was 0.3° above the normal. It was about normal over the panhandle and ranged from 0.5 to 3.4 above over north and central Texas, with the greatest excess in the vicinity of Corsicana, while over other portions of the State there was a general deficiency, ranging from 0.2 to 2.4 over east, southwest, and west Texas, and from 0.3 to 1.7 over the coast district except in the vicinity of Houston and Brownsville, where it was normal, and at Brazoria, where it was 3.3 above. The greatest deficiency for the month was in the vicinity of Palestine. The highest was 108°, at Camp Eagle Pass on the 5th, at Duval on the 5th, at Emory on the 4th, at Lufkin on the 5th and 6th, at Mann on the 9th, at Panther on the 7th and 10th, at Texarkana on the 4th, and at Waxahachie on the 4th; and the lowest, 50°, at Valentine on the 24th. The average precipitation for the State was 0.28 below the normal. There was a general deficiency throughout the State except over the central portion of north Texas, the eastern and southern portions of central Texas, and the southern portion of east Texas, west Texas, and in the vicinity of Fort McIntosh and Houston, where there was an excess ranging from 0.19 to 4.41, with the greatest in the vicinity of Fort McIntosh. The deficiency ranged from 0.14 to 3.28 over the panhandle, the eastern and western portions of north Texas, southwest Texas, the western portion of central Texas, and the northern portion of east Texas, and from 0.09 to 3.41 over the coast district, with the greatest deficit in the vicinity of Orange. The greatest monthly amount, 7.53, occurred at Houston, and the least, 0.18, at Waco.—*I. M. Oline.*

Utah.—The mean temperature was 69.4°, or about normal; the high-

est was 111°, at Mount Pleasant on the 10th, and the lowest, 35°, at Loa on the 20th. The average precipitation was 0.40, or 0.42 below normal; the greatest monthly amount, 1.56, occurred at Parowan, and the least, trace, at Corinne.—*J. H. Smith.*

Virginia.—The mean temperature was 73.7°, or 1.3° below normal; the highest was 100°, at Farmville on the 3d, and at Petersburg, Bonair, and Nottoway on the 30th, and the lowest, 47°, at Doswell on the 10th, and at Dale Enterprise on the 26th. The average precipitation was 2.42, or 1.17 below normal; the greatest monthly amount, 5.62, occurred at Warsaw, and the least, 0.33, at Farmville.—*E. A. Evans.*

Washington.—The mean temperature was 67.7°, or 2.4° above normal; the highest was 109°, at Fort Simcoe on the 20th, and the lowest, 32°, at Wenatchee Lake on the 25th. The average precipitation was 0.55, or 0.05 below normal; the greatest monthly amount, 2.66, occurred at Tatoosh Island, while none fell at Fort Simcoe.—*G. N. Salisbury.*

West Virginia.—The mean temperature was 70.9°, or 3.0° below normal; the highest was 100°, at New Martinsville on the 4th, and the lowest, 42°, at Beckley on the 27th. The average precipitation was 2.91, or 1.00 below normal; the greatest monthly amount, 5.93, occurred at White Sulphur Springs, and the least, 0.77, at Beckley.—*H. L. Ball.*

Wisconsin.—The mean temperature was 64.9°, or 2.4° below normal; the highest was 97°, at Gratiot on the 28th, and the lowest, 28°, at Crandon on the 19th. The average precipitation was 2.40, or 0.12 below normal; the greatest monthly amount, 5.25, occurred at Citypoint, and the least, 0.55, at Gratiot.—*W. M. Wilson.*

Wyoming.—The mean temperature was 65.6°, or 1.4° below normal; the highest was 101°, at Carbon on the 12th, and the lowest, 31°, at Atlantic City on the 25th. The average precipitation was 1.35, or 0.54 above normal; the greatest monthly amount, 2.60, occurred at Wheatland, and the least, 0.01, at Strong.—*M. G. Renow.*

RIVER AND FLOOD SERVICE.

By PARK MORRILL, Forecast Official, in charge of River and Flood Service.

The rivers are now very near their lowest, the stage of none exceeding 10 feet at the close of the month. A slight swell occurred in the lower Mississippi during the first half of the month, most marked at Vicksburg.

The highest and lowest water, mean stage, and monthly range at 112 river stations are given in the accompanying table. Hydrographs for typical points on seven principal rivers are shown on Chart V. The stations selected for charting are: Keokuk, St. Louis, Cairo, Memphis, and Vicksburg, on the Mississippi; Cincinnati, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.

The following résumé of river stages and conditions of navigation in the respective streams is compiled from reports by the officials of the Weather Bureau at various river stations and section centers:

Hudson River. (Reported by A. F. Sims, Albany, N. Y.)—The Hudson was at its normal summer level during the first decade of August. During the night of the 10th and 11th heavy rainfall caused the Mohawk and Hudson rivers to rise 2 feet, and by the afternoon of the 11th tugs and steamboats had trouble in making landings. The dam at Boonville, N. Y., was swept away on the 11th, and the mills in that vicinity were badly damaged. The heavy rains in the Normanskill Valley, at the western end of Schenectady County, made the stream bank full, and, during the 11th, five bridges between Duanesburg and South Schenectady, N. Y., were carried away and the meadows covered with a deposit of gravel. The Hudson River reached the lowest point since the opening of navigation by the 22d. The heavy rains of the 23d and 24th on the upper Hudson watershed found its way to the tributaries within twenty-four hours, and caused turbidity in the tide-water portion of the Hudson. Practically no rain fell on the watershed during the last week of August, so that the end of the month finds a low stage of water in the Hudson between Troy and Coxsackie.

Susquehanna River and branches. (Reported by E. R. Demain, Harrisburg, Pa.)—Heavy showers during the latter part of July caused fair stages at the beginning of August in most of the streams of the Susquehanna system, and especially in the lower river, but the waters fell slowly and the month closed with low water throughout the system. Heavy local showers from the 20th to the 25th were followed by a slight rise in the river at Harrisburg and stations above. At Cedar Run and Sinnemahoning, on the west branch, the gauge readings were below zero during the entire month, and at Wilkesbarre, on the north branch, the water fell to a zero stage on the 10th, and ranged from zero to 1 foot below during the remainder of the month. The gauge readings for 14 reporting stations averaged 1.3 foot for the month, and the average rainfall for 17 stations was 3.0 inches.

Rivers of South Atlantic States. (Reported by E. A. Evans, Richmond, Va.; C. F. von Herrmann, Raleigh, N. C.; L. N. Jesunofsky, Charleston, S. C.; D. Fisher, Augusta, Ga.; and J. B. Marbury, Atlanta, Ga.)—The rainfall over the James River basin for the month, though somewhat in excess of the normal, caused no rise in the stream. A low and uniform stage of water prevailed during the entire month. The water was unusually clear all the month and was brackish at lower river points, where it is usually fresh.

During the month the rivers throughout North Carolina remained continuously low, and the ranges were extremely small. The precipitation at many points this year was less than during the remarkable drought of August, 1896, and the principal streams at the end of the

month had fallen to the unusually low stages of last year. The Roanoke at Danville was below the zero of the gauge the greater portion of the month, and navigation did not extend above Hamilton. The lowest stage reached at Fayetteville, on the Cape Fear River, in 1896, was 1.9 foot on August 12, as compared with 2.3 feet on August 5, this year. No interruption of milling in consequence of present low stages has yet been reported.

The frequent and heavy rains over North Barnwell, Orangeburg, Aiken, Lexington, and Edgefield counties from the 14th to 22d produced a severe freshet along the entire length of the Edisto River from Johnston to Jacksonboro, continuing to the end of the month. On the 15th there was a 4.6 foot stage of water at Edisto; following this date, a steady, daily rise of nearly 0.2 foot occurred until the morning observation of the 26th, at which time the gauge registered 6.6 feet, or 0.1 foot above the danger line; by the morning of the 27th, the stream had receded 0.1 foot, and declined very slowly the remaining days of the month. The freshet reached Jacksonboro on the 27th, and proved a great loss to the rice planters on the lower river, coming at a time when the rice was ripening fast, and required the immediate drainage of the plantations for the purpose of harvesting. Thousands of acres of matured rice were spoiling for the want of drainage, which could not be effected because the stream was more elevated than the water in the rice fields. In some few instances on the low margin of the swamp lands, late corn was damaged to a limited extent. The Aiken Manufacturing Company's milldam, at Bath, was washed away on the 21st, and considerable damage was done to the roads in Orangeburg County.

The rainfall throughout the upper Savannah Valley was greater than the average amount, while in the immediate vicinity of Augusta it was more than double; the constant rain in this section from the 14th to the 23d was a source of much apprehension to the river planters. The critical period arrived on the 19th, when the river was beginning to feel the effects of the general rains above, and in consequence rose steadily until the 21st; it then fell 4.5 feet, but before night another rise was on, which culminated in a 20.4 foot river at Augusta on the early morning of the 22d. After this, to the end of the month, its fall was regular, but a few more feet on the 22d would have played havoc with the corn. Navigation was regularly carried on during the month, there being a marked increase in the carrying trade, both down and up stream, over that of last month. The stages have continued low in other Georgia streams, though there were several heavy rains at intervals.

Mobile River and branches. (Reported by F. P. Chaffee, Montgomery, Ala., and W. M. Dudley, Mobile, Ala.)—During the first half of the month, the rains were sufficient and so well distributed as to prevent any rapid decline in the Alabama and its tributaries, and a light draught stage was maintained. From the 16th to the 24th, continuous and, on some dates, heavy rains, caused the rivers to rise to decidedly higher than the average stage at this season, giving good boating stages during the latter half of the month, with a gradual decline in the rivers during the last week.

There was a gradual fall in the Tombigbee and its tributaries from the opening of the month to the 7th, when heavy rains on the 8th and 9th caused a steady rise, making good stages by the 15th. The rains on the 19th to 22d also produced a gradual rise.

Ohio River and branches. (Reported by F. Ridgway, Pittsburg, Pa.; H. L. Ball, Parkersburg, W. Va.; S. S. Bassler, Cincinnati, Ohio; F. Burke, Louisville, Ky.; P. H. Smyth, Cairo, Ill.; L. M. Pindell, Chattanooga, Tenn.; and H. C. Bate, Nashville, Tenn.)—Comparatively low stages of water prevailed in the upper Ohio throughout the entire month, although the larger packets were not forced to entirely suspend operations until the 23d. The lighter packets were not tied up until the last week of the month. The month closed with all navigation suspended on account of low water. The month opened with the wickets